

Remarks

The Office Action has failed to cite any reference or any statutory basis in connection with the discussion of claims 5, 6, 16 and 17, such that the status of these claims and/or any rejection thereof is confusing, thus failing to meet the requirements of the M.P.E.P. and applicable law. The statement of rejection of claims 8 and 19 is also improper because it erroneously cites a reference that is not used in the corresponding rejection. The rejections are also improper because the combination of references does not disclose various limitations, including those directed to forming a p-n in an amorphous region using subsequent implant steps. The following more particularly addresses these matters.

The non-final Office Action dated September 23, 2008, lists the following rejections: claims 1-4, 7, 9-15 and 18 stand rejected under 35 U.S.C. § 103(a) over An *et al.* (U.S. Patent No. 6,245,618) in view of Mehrad *et al.* (U.S. Patent Pub. 2003/0207527, hereinafter the '7527 publication); claims 8 and 19 stand rejected under 35 U.S.C. § 103(a) over An in view of Wu (US Patent No. 5,773,348) and further in view of Lai (U.S. Patent Pub. 2002/0102801). Claims 5, 6, 16 and 17 are not listed in any statement of rejection. The Office Action also notes an objection to the abstract. Applicant traverses all rejections (express or implied), and further does not acquiesce to any rejection or averment in this Office Action unless Applicant expressly indicates otherwise.

The section 103 rejection of claims 1-4, 7, 9-15 and 18 is erroneous because the cited combination of references does not disclose the claim limitations as asserted in the Office Action. Applicant agrees with the Office Action's assertion that the '618 reference does not disclose limitations directed to an amorphizing implantation carried out prior to performing two implantations of dopants of opposite conductivity types, because the '618 reference requires a post-implantation amorphization and relies upon this post-implant amorphization to effect its purpose. However, neither the cited amorphizing region 120 from the '618 reference nor the cited amorphizing dopant 216 in the '7527 publication discloses forming an amorphizing region as claimed, where a p-n junction is formed in the amorphizing region. For example, referring to Figures 2, 3 and 6 of the instant application, implants I₁ (FIG. 3) and I₂ (FIG. 6) are made into the region

amorphized via implant I_0 (FIG. 2), as is consistent with the claims and various example embodiments.

In contrast, the cited “buried amorphous region 120” in the ‘618 reference is clearly distanced from the source/drain extensions 60 and the asserted p-n junction formed by the extensions and the region 130, and is located below the channel. This is consistent with the purpose of the ‘618 reference as recited in its Abstract and in other discussions, which is to form a “buried amorphous region, formed below the channel region” for purposes including suppressing “diffusion of displaced atoms and holes from the source/drain regions.” Accordingly, neither the asserted p-n junction in the ‘618 reference nor the channel regions is formed in the amorphous region. Similarly, the cited “pre-amorphizing implantation” from paragraph 0022 of the ‘7527 publication is separate from any junction, and is implemented for the formation of diode used in a flash memory that does not apply to the claimed p-n junction a channel region between source/drain extensions. In this context, regardless of whether the amorphizing implants in the cited references are carried out before or after subsequent p-n junction implants, there is no teaching or suggestion of forming the p-n junction in and/or as part of the amorphized region as claimed, and the purpose of the primary ‘618 reference clearly teaches away from such limitations. The cited combination of references accordingly fails to teach or suggest the claimed amorphizing implantation and related formation of a p-n junction therein.

The proposed combination of references also fails to disclose various other claim limitations, such as those directed to an amorphizing implant performed via the upper surface of a substrate, and various steps of forming source and drain regions, their extensions and corresponding masks.

Applicant further submits that the proposed combination of references would not result in a method (and related structure) that is operable in accordance with the claimed invention. As described above, the resulting p-n junction is separate from any amorphization and, correspondingly, cannot function in accordance with the claimed invention. For example, the extensions 60 in the ‘618 reference cannot be formed in the amorphized region due to their alignment with the respective masks and gate spacer 70. Combining the ‘7527 publication with the ‘618 reference does not appear to alleviate this

issue, as the Office Action has not explained any rationale for using the cited diode/flash memory approach with the extension/channel junction in the '618 reference. That is, it appears that the Office Action is relying upon the '7527 publication simply for teaching moving the timing of the amorphization in the '618 reference to a pre-amorphization implantation "to aid in diode junction formation," but without changing other aspects of the implantation. In this regard, the resulting combination does not provide an operable p-n junction formed in an amorphizing region as claimed.

The Section 103 rejections of claims 8 and 19 are also improper because the statement of rejection erroneously cites to the '348 reference, which is not used in the rejection (*i.e.*, as referring back to the rejection of claim 1, to which the '348 reference is not applied). The rejection thus fails to meet the requirements of the M.P.E.P. and applicable law. Should these claims be the subject of any forthcoming rejection, Applicant requests that such rejection be made in the form of a non-final action to afford the Applicant an opportunity to address the merits of and respond to the rejections.

Applicant also submits that any rejection of claims 8 and 19, which relies upon the above-discussed rejection of claim 1, would also be improper for reasons including those discussed above.

Claims 5, 6, 16 and 17 are not mentioned in any statement of rejection under the Section 103 rejections or otherwise. The Office Action discusses these claims after the Section 103 rejections of claims 1-4, 7, 9-15 and 18 (see pages 8 and 9), but has not cited any references or any rejection (under Section 103 or otherwise). In this regard, the Office Action has not clearly set forth the status of these claims, which is improper under the M.P.E.P. and relevant law. Applicant would therefore understand these claims to be allowable. Should these claims be the subject of any forthcoming rejection, Applicant requests that such rejection be made in the form of a non-final action to afford the Applicant an opportunity to address the merits of and respond to the rejections. Notwithstanding this, Applicant believes that the cited references fail to anticipate claims 5, 6, 16 and 17, in accordance with the above discussion.

The amended Abstract has fewer than 150 words and no longer includes the terms objected to. Applicant appreciates the Examiner's attention to these matters, and requests that the objection to the Abstract be removed.

Applicant has amended claim 12 to remove certain limitations and for readability. Claim 13 has been amended to include limitations removed from claim 12. Applicant believes that these amendments are not necessary for presenting the claim in an allowable form, in view of any references or otherwise. New claim 20 is directed to subject matter that is generally consistent with claim 1 (from which it depends), and sets for the amorphizing implantation with subsequent implantation therein of extension and channel regions that form a p-n junction. Applicant believes that claim 20 is allowable over the cited references for reasons including those discussed above, and further because the references fail to disclose these new limitations. Support for claim 20 may be found in the specification and figures, with exemplary embodiments shown in and described in connection with Figures 1-6 and their corresponding steps.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063 (or the undersigned).

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